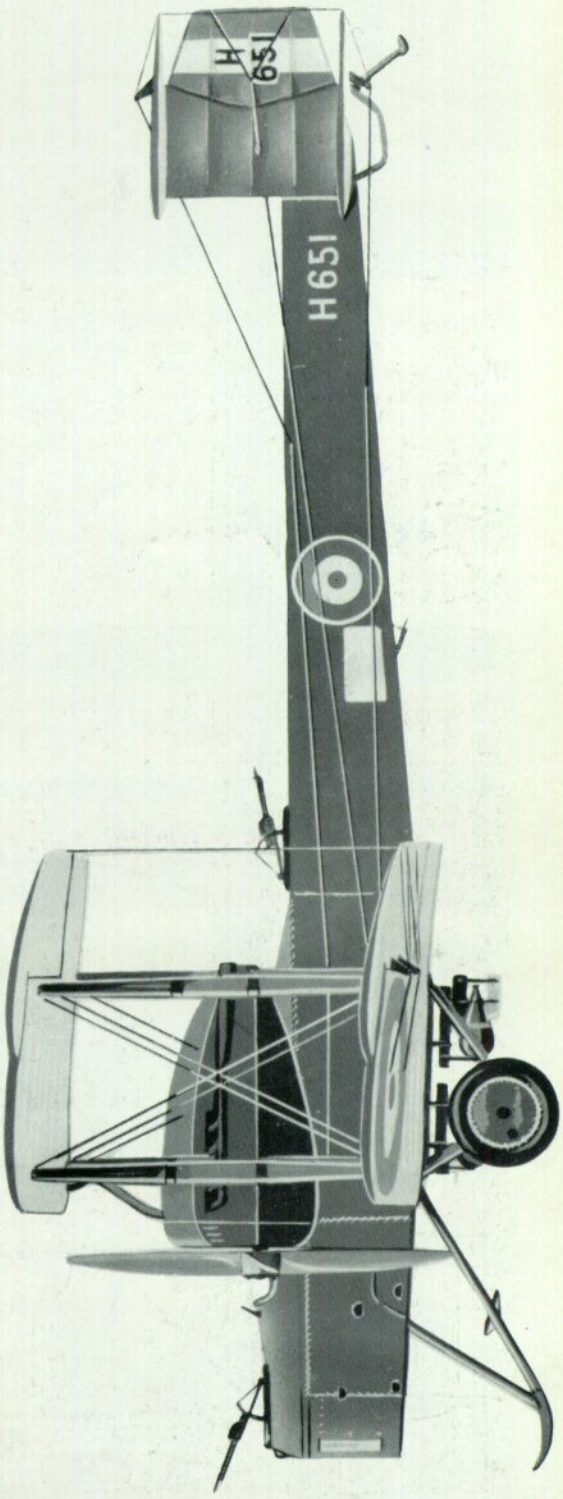
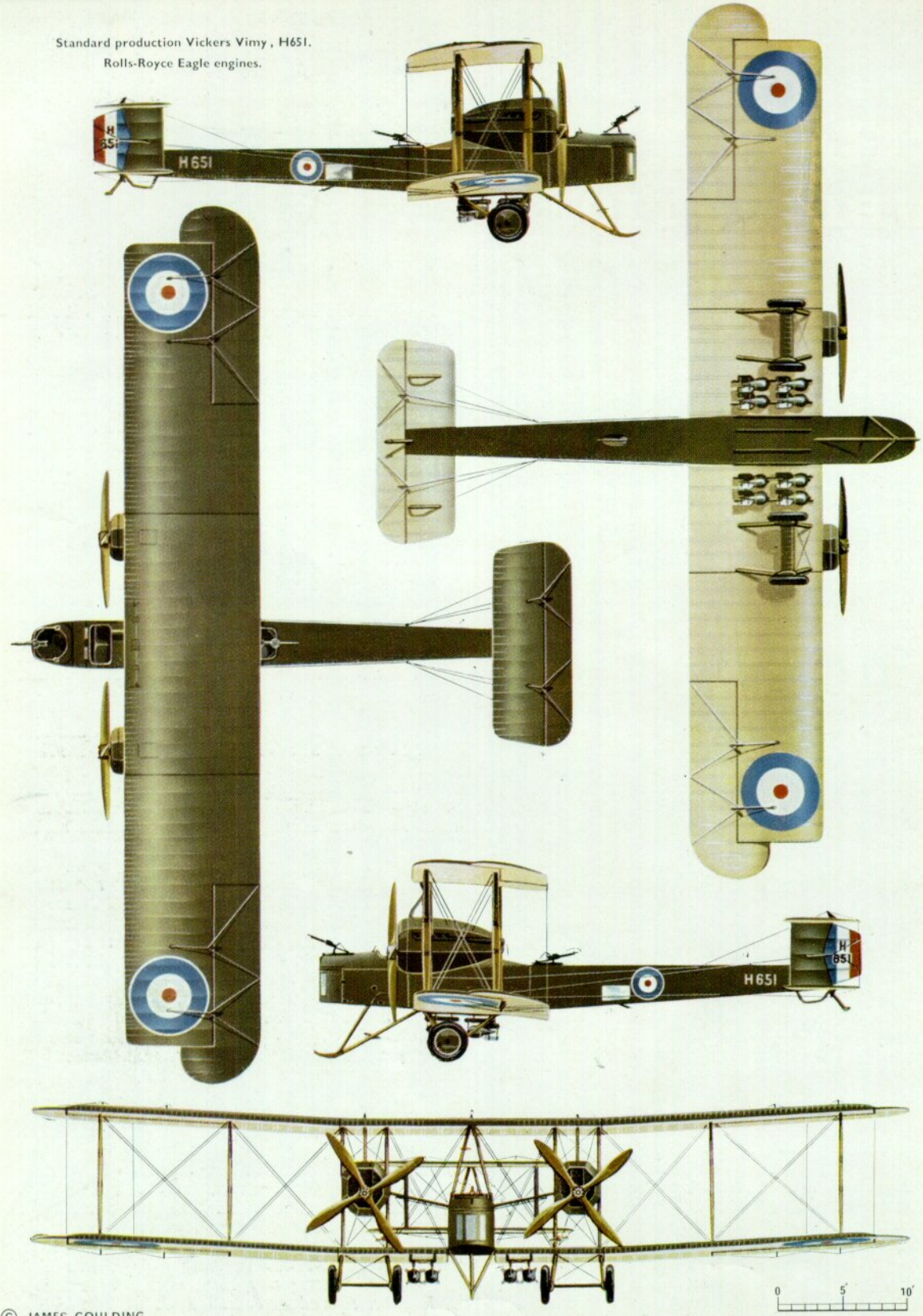
PROFILE PUBLICATIONS

The Vickers F.B.27 Vimy



NUMBER 5

Standard production Vickers Vimy, H651.
Rolls-Royce Eagle engines.



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The Vickers Vimy

by J. M. Bruce

The first prototype, B9952, with enlarged radiators.

On 23rd July 1917, less than six weeks after German bombers had attacked London in daylight, killing 162 people and injuring 432, the Air Board took the extraordinary decision that all orders for experimental heavy bombers should be cancelled. The incensed protest of the Controller of the Technical Department led to a further discussion a week later, when wiser second thoughts persuaded the Air Board to order 100 Handley Page 0/400s for night bombing and prototypes of new experimental heavy bombers from Handley Page Ltd. and Vickers Ltd.

The Vickers contract, No. A.S.22689/1/7, dated 16th August 1917, was for three aircraft, numbered *B9952—B9954*. Vickers' chief designer was the young Reginald Kirshaw Pierson, who roughed out a preliminary layout of the new bomber during a discussion with Major J. C. Buchanan at the Air Board.

Detailed design work and construction of the first prototype occupied less than four months; the Vickers type number F.B.27 was allotted to the aircraft. It was intended to power the F.B.27 with two 200-h.p. R.A.F. 4d or two 200-h.p. Hispano-Suiza engines. The R.A.F. 4d was an air-cooled V-twelve, the Hispano-Suiza a water-cooled V-eight. By the late autumn of 1917 the R.A.F. 4d had not been developed to the point where it could be installed in the F.B.27, consequently the first aircraft was built with two 200-h.p. Hispano-Suizas. It made its first flight at Joyce Green on 30th November 1917, piloted by Captain Gordon Bell.

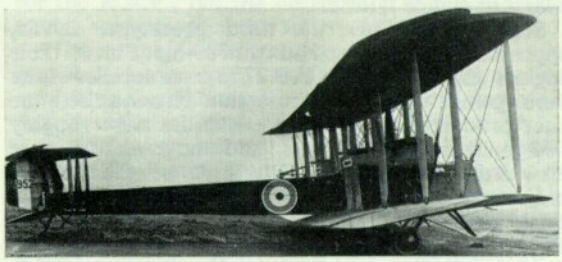
The Vickers F.B.27 was designed to accommodate a crew of three and twelve bombs. There were gunners' cockpits, each with a Scarff-mounted Lewis gun, in the nose and behind the wings; the pilot's cockpit was just ahead of the wings. The bombs were stowed vertically within the fuselage between the spars of the lower centre section.

When it first appeared *B9952* had horn-balanced ailerons, elevators, and 1° of dihedral on the mainplanes. Long vertical pipes led the exhaust gases through the upper wing to discharge above it. Fuel capacity totalled only 92 gallons in a single main tank, ten in a gravity tank that formed the central leading-edge portion of the upper centre section. The petrol pipes were protected with nickel-steel tubing.

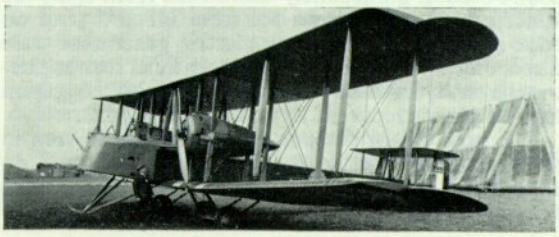
The first Vickers F.B.27 went to Martlesham Heath for official trials in January 1918. It is reported to have created a minor sensation by lifting a greater load than the Handley Page 0/400, which had almost twice as much power. Unfortunately, persistent engine troubles were experienced while the aircraft was at Martlesham. It returned to Joyce Green on 12th April 1918, by which time its exhaust stacks had been replaced by shorter horizontal pipes.

Later in 1918, *B9952* was extensively modified. Two 260-h.p. Salmson water-cooled radial engines replaced the Hispano-Suizas; a tail unit similar to that of the later prototypes was fitted; the mainplanes were rigged with 3° of dihedral and the leading-edge gravity tank was of the 15-gallon size introduced on *B9954*. Small transparent panels were let into the nose, and the plywood covering of the fuselage sides was extended to the rear of the pilot's cockpit.

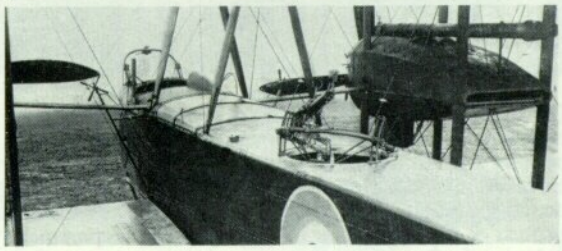
In this modified form *B9952* survived the Armistice. It was allotted, but probably never wore, the civil registration G-EAAR. With a Vickers identification, C-105, painted on its fuselage, it flew from Brooklands to Amsterdam in August 1919 to form part of the Vickers exhibit at the E.L.T.A. exhibition. Its civil registration was cancelled in May 1920.



Above, top. *First prototype F.B.27 in its original form.* Above: *B9952 at Martlesham Heath, doped khaki-green and fitted with horizontal exhaust pipes replacing original upright stacks.* Below: *B9952, final form with Salmson engines and revised tail unit with plain elevators.*



The second prototype, B9953, with Maori engines and inversely tapered ailerons. Below: *Details of B9953's central fuselage.*



The second prototype, *B9953*, appeared early in 1918. It differed from the first aircraft in having plain elevators and plain ailerons that were inversely tapered. The tips of the wings and tailplanes also differed from those of *B9952*, and the plywood covering on the fuselage nose was differently disposed.

Defensive armament was improved by the provision of a lower rear gun position. On a cross rail between the third and fourth bays of the rear position of the fuselage was a mounting for a Lewis gun that could be fired rearwards and downwards through an aperture in the underside of the fuselage. This gun was supposed to be fired by the rear gunner, who would have had to be a man of considerable agility to use both guns effectively in combat. A small transparent panel was let into each side of the fuselage, level with the rear ventral gun position. This additional gun position was standardised on all subsequent aircraft of the type.

Power for the second F.B.27 was provided by two 260-h.p. Sunbeam Maori engines driving four-blade left-hand airscrews. The main radiators had shutters, and engine instruments were carried on the inboard sides of the nacelles; each dial was provided with an individual externally-mounted lamp.

The Maori-powered F.B.27 was tested at Joyce Green in April 1918. The cooling system proved troublesome at first, but the aircraft was sent to Martlesham Heath on 26th April and underwent some official tests in the following month. It was not extensively tested, however, for it crashed on an early flight owing to engine failure.

Some weeks later the third prototype, *B9954*, appeared. This machine had two 300-h.p. Fiat A-12bis engines and was the first F.B.27 to have nacelles of the same general shape as those that characterised the later production Vimy. These nacelles were roughly octagonal in cross section, and the radiators were provided with shutters. The tops of the engines projected above the nacelles, and each had a long, massive exhaust pipe to starboard, just above the top of the nacelle. Two centrifugal petrol pumps were fitted to the front spar of the lower centre section directly under the engines; these pumps were driven by small four-blade airscrews on the leading edge. The water header tank for each radiator was fitted in the centre section immediately behind the front spar, the water pipe running down the front inboard strut on each side. Two wind-driven electric generators were fitted, one on the inboard side of each inner rear engine-nacelle strut, for *B9954* was equipped with navigation lights and was reported to have landing lights.

The nose of the fuselage was re-designed. Seen in side elevation, the front was vertical, whereas on *B9952* and *B9953* it had a backwards rake. Three vertical transparent panels were fitted, and the bomb sight was mounted externally. The area of plywood covering was increased, extending as far aft as the rear of the pilot's cockpit. On the rear gunners' cockpit there was a Scarff twin-gun mounting for a pair of double-yoked Lewis guns.

No further change was made in the design of the tail unit, which was identical with that of *B9953*; but *B9954* appeared with two different sets of mainplanes and ailerons. Its original surfaces were like those of *B9953*. It had been decided in June 1918 that all production aircraft were to have the balanced ailerons of the first prototype, and it is probable that *B9954* did not keep its plain ailerons for long. By the time it went to Martlesham Heath on 15th August 1928 it had been fitted with balanced ailerons. With both sets of wings *B9954* had greater dihedral than its two predecessors: the angle was increased to 3°, which remained standard on production aircraft. In this form *B9954* was fitted with external bomb racks under the fuselage and lower centre section.

At Martlesham, performance tests were held up owing to delays in replacing the original airscrews, both of which cracked in flight. In fact, *B9954* did little flying at Martlesham, for it was destroyed there on 11th September 1918. According to *Flight* of 12th June 1919, the crash occurred " . . . owing to the pilot stalling shortly after leaving the ground. Unfortunately it had been loaded with live bombs, which exploded on reaching the ground, causing fatal injuries to the pilot".

The fuel capacity of the Vickers F.B.27 had been more than doubled since the appearance of *B9952*. On *B9954* the two main tanks held 86 gallons and 140 gallons of petrol, and the gravity tank had been enlarged to hold fifteen gallons.

The worth and potential of the F.B.27 had been convincingly demonstrated by *B9952* in its original form, and contracts for its production were let before the development and evaluation of the later prototypes was carried out. The first contract, for 150 aircraft, was dated 26th March 1918; the aircraft were to be numbered *F701-F850*, and production was to be undertaken at Vickers' Crayford works.

Production by several other manufacturers was envisaged. In May 1918 contracts were given to

B9954 in its original form with inversely tapered ailerons.

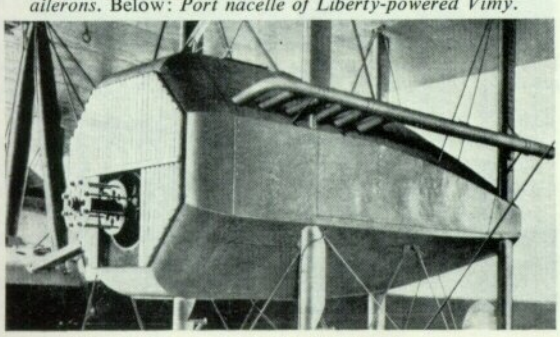
Clayton & Shuttleworth, Morgan & Co., and the Royal Aircraft Establishment at Farnborough; and in June a further 200 aircraft were ordered from Vickers, the production to be undertaken at Weybridge. More than 1,000 Vimys were ordered under wartime contracts.

By this time the name Vimy had been allotted to the F.B.27 design under the first official system of aircraft nomenclature. It was regarded as being within the category of R.A.F. Type VII, Short Distance Night Bomber. Several types of engine were to be fitted to the production aircraft, and Mark numbers were to be used to distinguish sub-types. The maker's designation was now F.B.27A which, according to one official document, was first applied to the second prototype.

The wide range of engines tried in and envisaged for the production Vimys provides an interesting commentary on the aero-engine supply situation as it was in 1918. The official list of contracts mentions the Fiat A-12bis, 230-h.p. B.H.P. and 400-h.p. Liberty engines only; there is no mention of the Rolls-Royce Eagle, but this is scarcely surprising. For a variety of reasons*, the output of Rolls-Royce engines fell considerably short of the demand for them, and there can be no doubt that the large British orders for the American Liberty engine were placed because it promised to be a possible alternative to the Rolls-Royce Eagle.

Much statistical forecasting was done in 1917 immediately after the decision to increase the strength of the R.F.C. to 200 squadrons. In September 1917 it was forecast that enough engines would be available to equip fifteen of the additional bombing squadrons and eighteen fighter squadrons. The bomber units would be equipped with B.H.P. or Fiat engines, of which it was estimated there would be a surplus of 1,183 by June 1918. Two thousand Fiat engines had been ordered in August 1917 for delivery between January and June 1918, half for America, half for use in D.H.9s. But by the end of June only 311 had been handed over to the British services, and there was a deficit of 558 B.H.P. and Fiat engines in June 1918 instead of the expected surplus. Only the first few production Vimys had Fiat engines; these aircraft had two main tanks each of 77-gallons capacity only.

B9954 with standard wings, increased dihedral and horn-balanced ailerons. Below: *Port nacelle of Liberty-powered Vimy.*



It was intended to fit the 300-h.p. high-compression Siddeley Puma version of the B.H.P. engine to some Vimys and full detail drawings were prepared. This idea was abandoned, however, and no Vimy was fitted with the Puma engines.

At the request of the United States of America authorities, two 400-h.p. Liberty 12 engines were installed in one Vimy at Bexley Heath; one document indicates that the aircraft had been built to the order of the U.S. Air Service. The Liberty nacelles were somewhat similar to those of the Fiat engines but each had two rather high-set exhaust pipes. The frontal radiators were distinguished from all other Vimy engine installations by having vertical shutters.

The Liberty-Vimy never flew: while being erected at Joyce Green it was destroyed by fire. The Liberty engine was specified for a number of Vimys on order for the R.A.F., but the decision to fit the American engine was cancelled in January 1919.

With so many changes of power unit and so much uncertainty over engine availability, it is perhaps not surprising that there are conflicting official records of the allocation of Mark numbers to Vimy variants.

An A.I.D. report printed in December 1918 implies that the designation Vimy Mark II applied alike to the aircraft with Liberty, Fiat and Salmson engines. This is largely supported by the official handbook on the engine installations of the Vimy. Dated May 1919, this book applies the designation Vickers F.B.27A Vimy Mk II to aircraft fitted with the Fiat A-12, Fiat A-12-bis, Rolls-Royce Eagle VIII, Siddeley Puma and Liberty engines; this appears to indicate that the Mk II designation was intended to apply fundamentally to the airframe, regardless of power units. A Vickers drawing of the Vimy with Eagle VIII engines dated September 1920 also bears the designation F.B.27A Vimy Mark II; so does an official description of equipment, dated October 1920. However, other official sources give different information.

Technical Department Instruction No. 538A, which is dated January 1919 and therefore originated between the dates of the A.I.D. report and the engine-

* See *The War in the Air*, Vol. VI, pages 45—51.

installation handbook, states that the Vimy Mk I was the Maori-powered version; Mk II was the Fiat version; Mk III was to have B.H.P. (Siddeley Puma) engines; and that Mk IV had Rolls-Royce Eagle VIII engines. This document gives no Mark number to the Hispano-Suiza prototype, and indicates that the Maori and B.H.P. variants had been abandoned.

Yet another allocation of Mark numbers appears in an official record of performances of British aeroplanes, drawn up in February 1921. This calls the Hispano-Suiza version the Mk I, the Maori version the Mk II, the Fiat-powered variant the Mk III, and gives no Mark number to the Eagle-powered Vimy. The designation Vimy IV has come to be generally applied to this last-named sub-type, but its authenticity seems to have been, at best, only partial. Officially, it was comparatively short-lived, for the Vimy Mark numbers were revised and rationalised in the mid-1920s. This is discussed further on page 9.

In the Fiat-powered production aircraft there was provision for carrying up to eighteen bombs: two 520-pounders under the fuselage and four 230-pounders under the lower centre section on external racks; the internally-carried load could consist of four 112-lb. bombs and eight 250-lb. bombs.

The Vimy was also being developed in another role. By 1918 a good deal of experimental work with torpedo-carrying aircraft had been done, and official requirements for such aircraft had been divided into two categories: a fast, manœuvrable machine carrying a light torpedo for close-range attack, and a heavier aircraft for long-range attack. The Sopwith Cuckoo was regarded as fulfilling the first requirement, with the Short Shirl and Blackburn Blackburd in prospect. The development of the long-range aircraft was less urgent, but the Vimy was selected as suitable and an A.I.D. description of the aircraft states "Two torpedoes may be carried instead of the two 520-lb bombs".

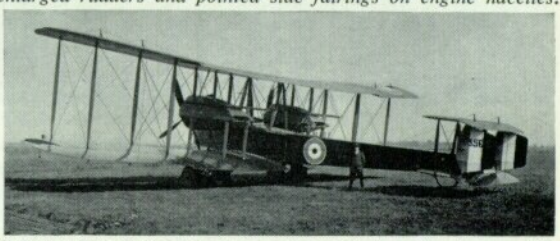
In August 1918 consideration was given to the installation of flotation gear in the Vimy, but it is not known whether any aircraft was so equipped.

To quote again from *Flight* of 12th June 1919, the Air Board intimated "that the machines delivered during 1918 were to be utilized for anti-submarine work, and that subsequent deliveries were earmarked for night bombing in France." It is uncertain whether the torpedo-carrying version of the Vimy was intended for the anti-submarine role, but it seems unlikely. Early in 1918 a new policy had been laid down for the use of aircraft in the anti-submarine campaign, and one of its most striking features was the great increase in the number of landplanes required for the task. In November 1917 the estimated requirements of aircraft were for 525 seaplanes and 66 landplanes, but under the new policy 459 seaplanes and 726 landplanes would be required. These figures were never realised, but no doubt the Vimys would have constituted part of the total of 726 landplanes. In 1920 *F9186* underwent ditching trials, but it is not known whether there was any connection with the proposed wartime duty.

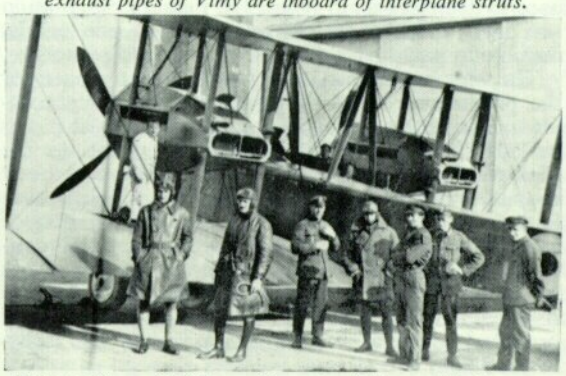
It was probably intended that the Vimy should replace the Blackburn Kangaroo on anti-submarine work. It is indicated in Technical Department Instruction No. 538A that the Fiat-powered Vimy was to be the anti-submarine version.

On 11th October 1918 a fourth prototype Vimy flew from Joyce Green to Martlesham for its official trials. This aircraft, *F9569*, was powered by two 360-h.p. Rolls-Royce Eagle VIII engines housed in nacelles generally similar to those of the Fiat-powered *B9954*,

F9569, first Vimy to have Rolls-Royce engines. In this view the shape of original radiators can be seen. Below: *F9569 had enlarged rudders and pointed side fairings on engine nacelles.*



Below: *This photograph was made at Bircham Newton, and the Vimy is believed to be the one that left that aerodrome for Egypt in September 1919, flown by Capt. C. H. Darley, D.S.C., D.F.C., with his younger brother Capt. C. C. Darley as navigator. After a forced landing near Lake Bracciano in Italy the Vimy struck a telegraph pole when attempting take-off and crashed. Capt. C. H. Darley was burned to death, his brother surviving and reaching the rank of Air Commodore in the R.A.F. Note exhaust pipes of Vimy are inboard of interplane struts.*



Below: *Vimy with 37-mm. Coventry Ordnance Works gun.*

Below: *Vimy J7451 at R.A.E., Farnborough, with smoke-producing apparatus.* (Photo: Crown Copyright)

but distinguished by their twin exhaust pipes and four-blade left-hand airscrews. As on *B9954*, the water header tanks were in the centre section, but they were located centrally above the engines and their water-supply and vapour-release pipes were midway between the struts.

The prototype Eagle-Vimy had enlarged rudders of a slightly modified shape; otherwise the airframe was virtually identical with that of *B9954*. The fuel capacity was greatly increased, however, at the expense of the internal bomb compartment: there was tankage for 452 gallons of petrol.

At Martlesham the Eagle-Vimy proved its excellence by flying at over 100 m.p.h. near the ground at an all-up weight of 12,500 lb. (not with a load of 12,500 lb., as has been incorrectly stated in some reports: with full crew and 3,650 lb. of fuel aboard, the military load was only 1,209 lb., some of which would be accounted for by the Lewis guns and their ammunition). The service ceiling at that weight was only 7,000 ft., but presumably that was of small account as the Vimy was intended to be a night bomber. The fuel load of 3,650 lb. gave an endurance of eleven hours.

By this time, large-scale production of the Vimy had begun. Vickers, Morgan, Westland and the Royal Aircraft Establishment were all active Vimy builders, but the type was not available in quantity before the war ended. On 31st October 1918 the R.A.F. had only three on charge: two were with experimental units; the other, despite the official decree that Vimys built in 1918 were to go to anti-submarine squadrons, went to a unit of the Independent Force at Nancy. It was intended that the Vimy should make long-range raids deep into Germany, as far as Berlin. The Armistice intervened, however, and no Vimy was ever used operationally.

The Eagle-powered Vimy went into production also, and indeed most of the production aircraft were of this variant. They differed from *F9569* in having fin surfaces incorporated in the tail unit, the rudders reverting to the shape and area of those of the earlier prototypes; their radiators were enlarged and had cowlings that were more nearly regular octagons; the exhaust pipes were carried lower on the sides of the nacelles and shortened; the pointed tails of the nacelle sides that had appeared on *F9569* were not reproduced: the generators were fitted near the bottom of each forward inboard engine-nacelle strut. Some production Eagle-Vimys had their exhaust pipes enclosed within the engine nacelles instead of lying outboard of the engine-supporting interplane struts.

By the end of 1918 Vickers Ltd. had built only thirteen Vimys, seven at Crayford and six at Weybridge. Production continued after the Armistice, and the final total of Vimys built by Vickers under their wartime contracts was 112. This total comprised twelve of the batch F701 — F850 (of which F701 had Fiat engines), the complete batch *F8596 — F8645*, and fifty of the batch *F9146 — F9295*. It is known that *F8619* was at Farnborough on 17th September 1919, and that *F8631* was there on 10th November 1919.

It seems probable that most, if not all, of the Vimys ordered from Morgan & Co. were completed. On 23rd May 1919, *F3151* went to Farnborough from Hendon; *F3172* was at the R.A.E. on 10th November 1919; and *FR3185* crashed at Ramleh in Palestine several years later.

The Westland Aircraft Works built twenty-five of the seventy-five Vimys ordered under Contract No. 35A/2388/2689. It is known that *H5081* was at the

Trainer version of the Eagle Vimy with modified nose. Below: *JR7444 of No. 4 F.T.S., Abu Sueir, with Armstrong-Siddeley Jaguar engines.* (Photo: Air Ministry)

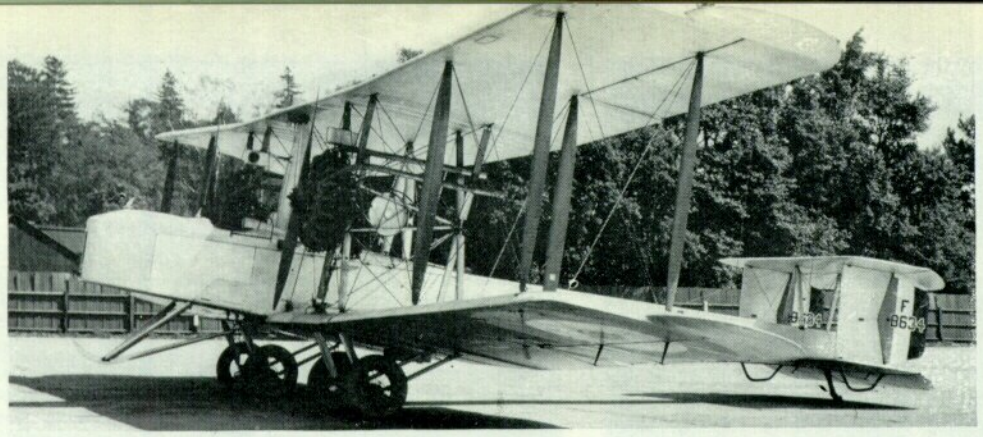
R.A.E. Farnborough on 12th December 1919, whence it went to Orfordness on 16th January 1920. The Westland-built aircraft were tested by Squadron Leader Rollo de Haga Haig, who on one occasion succeeded in looping a Vimy.

The history of the Vimys built at the R.A.E. itself is a remarkable one. Two batches, numbered *F2915 — F2934* and *H651 — H670*, were ordered. Only two aircraft, *F2915* and *F2916*, were completed in 1918; both were originally powered by Fiat engines. Official records indicate that *F2917* was in existence on 14th March 1919, but it is uncertain whether it was completed, at least with this identity.

It appears that Farnborough had at least partially completed *F2918 — F2920* but then ceased to use serial numbers of the first batch. The reason for this is not clear, but possibly the change to Rolls-Royce engines led to the abandonment of the *F2915 — F2934* range of serials.

After the Armistice, Farnborough's later Vimys seemed to be built, partly at least, on a kind of make-do-and-mend system. According to official records, by 21st July 1919 Vimy *H651* had had Eagle engines Nos. 5186 (port) and 5508 (starboard) installed. This Vimy flew for the first time on 7th August 1919, and by 13th October it had racks for eight 112-lb. bombs under the wings and four under the fuselage. It was tested with six 112-lb. bombs in the front internal bomb bay and two 230-pounders under each lower wing. The 230-lb. bomb ribs and carriers were subsequently removed and fitted to the Vickers-built Vimy *F8610*. To replace them, *H651* was fitted with the 230-lb. bomb ribs and carriers taken from *F8619*.

This last-mentioned Vimy was a Vickers-built aircraft that had been sent to Farnborough on 12th September 1919 because the R.A.E. had complained about the stability of the Vimy and wanted to compare a Vickers-built machine against one constructed at Farnborough (possibly *F2915* which, as will be mentioned later, had an experimental tail unit). On 3rd October, *F8619* collided with a field ambulance that was laying flares on the aerodrome, damaging its nose and lower centre section. It was thereafter dismantled, its parts finding various uses; *F8619* itself was written off on 3rd November 1919. The rear fuselage and tail unit were used for strength tests; the engines (nos. 4478 and 4602) and many other components were installed in the R.A.E.-built Vimy *H656*; the 230-lb. bomb racks went to *H651*, as already noted, its controls, spars and brackets were installed in *H655*; and the countershafts for operating the radiator shutters were fitted to *H658*.



Immediate right: *Third of the long-distance contenders was G-UABA, the* Silver Queen, *flown by Quintin Brand and Pierre van Ryneveld on the first stage of their flight to South Africa.*

Left: *Vimy F8634 with Bristol Jupiter engines.*

A direct product of the change to Rolls-Royce Eagle engines was *H652*. This Vimy was originally the Fiat-powered *F2916*, which apparently flew only twice before being converted at Farnborough to have Eagles. Minor additional modifications were the replacement of the standard carburettor controls by R.A.E. Positive Controls, and the replacement of the Vickers fuel system by a Bush system.

It is not known whether *H653* and *H655* were renumbered aircraft; both were apparently built with Eagle engines. A note under 30th October 1919 states that *H653* had parachute gear (type unspecified) fitted; the first mention of *H655* occurs on 8th December 1919. On 15th November 1919, *H654* was complete or nearly so. This aircraft was originally built for Fiat engines and may have undergone renumbering; it was later used by No. 70 Squadron in Iraq.

There is no doubt about *H656* and *H657*: they were renumbered from *F2919* and *F2920* respectively. The former flew to Orfordness on 13th January 1920; *H657* ultimately found its way to Egypt, where it was flown at No. 4 F.T.S., Abu Sueir, until about 1933.

The last three R.A.E.-built Vimys, *H658 — H660*, were completed in January and February 1920. It is recorded that *H658* had the red-and-blue night roundels on the fuselage, and was the first aircraft to be doped with the new Nivo finish. *H659* had to make do with second-hand engines (1962/W.D.40223 and 1190/W.D.39837); *H660* had one second-hand (2342/W.D.40413) and one new (5152/W.D.53300) engine.

It has been mentioned that the R.A.E. was dissatisfied with the Vimy's stability, and that *F2915* had experimental fins and rudders. By 1st May 1919 it had been fitted with a centre fin and rudder, and its side fins had been removed. In July 1919 the Morgan-built Vimy *F3151* was fitted with experimental rudders and acentral fin. When the R.A.E. conducted its experiments on the rudder control of twin-engine aeroplanes* the aircraft concerned were a Vimy (apparently *F3151*) and the D.H.10, *E6042*.

In the period after the Armistice the R.A.F. began to contract rapidly, consequently the introduction of the Vimy into the Service was a slow process. In July 1919, No. 58 Squadron in Egypt received Vimys as replacements for its Handley Page 0/400s. When the unit was renumbered as No. 70 Squadron on 1st February 1920 it kept its Vimys until they were replaced by Vernons late in 1922. In 1921, Squadrons Nos. 45 and 216, also in Egypt, had been equipped with Vimys. Those of No. 216 are well remembered for the part they played in operating the air-mail service between Cairo and Baghdad until August 1926.

At home, the Vimys of 'D' Flight of No. 100 Squadron were, in 1922, the only twin-engine bombers then in service with the R.A.F. in the U.K. On 5th July 1923 this Flight provided the nucleus of No. 7 Squadron, which flew the Vimys until they were replaced by Virginias in 1925. On 1st April 1924, Nos. 9 and 58 Squadrons were re-formed, both with Vimys, and the R.A.F.'s home-based heavy-bomber strength was trebled.

Although withdrawn from the front-line squadrons from 1924 onwards the Vimy served until January 1929 with No. 502 (County of Ulster) Squadron.

Apart from its use by full squadrons, the Vimy also served with the Night-Flying Flight at Biggin Hill. This unit was formed on 1st July 1923 for co-operation flying with anti-aircraft units; its equipment consisted of three Vimys and one Bristol Fighter. During the General Strike of 1926 the Vimys of the Night-Flying Flight helped to distribute the Government's emergency news-sheet, the *British Gazette*.

Vimys figured in several experiments in the years following the war. One was fitted with a 37-mm Coventry Ordnance Works recoilless gun on a special mounting on the nose; the bow cockpit had to be modified, and the massive pivoting support for the gun was mounted externally to starboard.

At the R.A.E., Farnborough, *H651* was used in experiments connected with the automatic landing of aeroplanes.* An iron weight of 1 lb. 7 oz. was suspended on fifty feet of strong waxed linen thread of 1/32-in. diameter; the other end of the thread was attached to a spring balance in the nose cockpit. The aircraft was flown light, at a weight of 9,000 lb. with the rear tank empty in order to bring the centre of gravity forward. The Vimy was trimmed at stalling speed with the controls free, and was then glided down at a constant air speed. A constant air speed was the ideal aimed at but, says the Report, "It is practically impossible to fly a Vimy at a constant air speed as hunting takes place as soon as the steady speed is approached". When the spring balance indicated that the weight had struck the ground the observer signalled to the pilot, who released the controls (an adjustable spring had been fitted to the control column) and allowed the Vimy to land itself. The words of the Report are probably something of an understatement:

> In the earlier part of the experiment considerable nerve and judgment were required on the part of the pilot to leave the aeroplane free long enough to determine what would happen, and take charge again in time before it

*See Aeronautical Research Committee Reports & Memoranda No. 908, *Experiments with rudders on two twin-engine aeroplanes*, December 1923.

*See Aeronautical Research Committee Reports and Memoranda No. 909: *Automatic Landing of Aeroplanes*, by F. W. Meredith of the R.A.E., December 1923.

did happen. Credit is due to Flight Lieut. Scholefield, who successfully carried the experiment through this stage.

About twenty-five landings were made by this method and although some were very bad, no serious damage was done to the aeroplane. In nearly every case the aeroplane landed with the tail some height up, but this did not appear to cause any serious bounce."

The Vimy *H651* was also used to test the Kennedy Cable Lock in October and November 1920. This device was a kind of irreversible mechanism that allowed the pilot to move the controls as he wished but prevented the air forces acting on the controls from moving them when the stick was released.

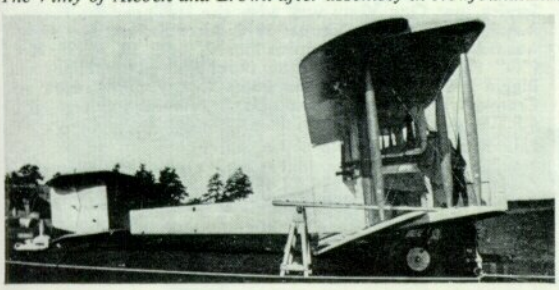
Other R.A.E. experiments included an installation of smoke-producing apparatus (in *J7451*) and an experimental attachment to the undercarriage.

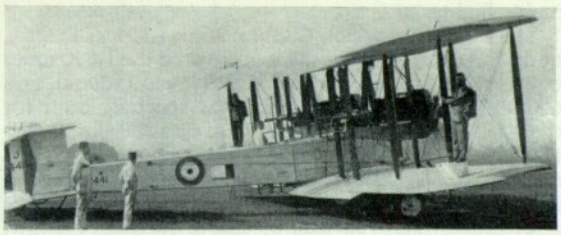
It seems that even the modest requirements of the post-war R.A.F. called for more Vimys than the curtailed wartime production had provided, for a further thirty were built, possibly from spares, by Vickers Ltd. under three small contracts given to them in 1923, 1924 and 1925. The Mark-numbering system was revised but, in the absence of adequate confirmatory detail, remains obscure. What seems certain is that, in the revised scheme, the basic Eagle-powered aircraft was designated Vimy Mk I, and the machines of the batches *J7440 — J7454* (and possibly *J7701 — J7705*) were designated Vimy Mk III. Apparently the Mk II was applied to some of the aircraft that were reconditioned by Vickers Ltd. The designations Vimy Reconditioned I, Vimy Reconditioned II, Vimy Reconditioned II School, and Vimy Production School all existed, but it is doubtful whether there was any discernible difference between the first two at least.

Between 1923 and 1931, Vickers Ltd. reconditioned at least forty-eight Vimys originally built under wartime contracts. Many of these were reconditioned more than once; some, like *F9634*, *F9147* and *F9168* came back three times; *F9176* was reconditioned four times. By the time these aircraft came in for overhaul the Vernon troop-carrier was in production, and the reconditioned Vimys were fitted with Vernon-type engine mountings, engine cowlings, exhaust manifolds, service tanks and tail-skids. Certain parts of the electrical system were revised. In all Vimys from the Reconditioned Mk II onwards the engines had Rolls-Royce hand starters, and the Production School and Mk III variants had metal tail-skids.

Many Vimys were used for training purposes. Of the aircraft reconditioned by Vickers Ltd., at least thirty

The Vimy of Alcock and Brown after assembly in Newfoundland.





J7441 in use as a parachute trainer.

were converted to dual control, including five of the Vimys Mk III, which had their dual control installed in October and November 1928. Some Vimys, possibly the batch *J7238 — J7247*, were initially built as trainers; this variant was known, to the manufacturers at least, as the Vimy Production School type. It had an extended nose, a modification that was made to other Vimys (e.g., *JR7444*) used as trainers.

With training units the Vimy soldiered on until the early 1930s. Apart from its use as a flying trainer at such units as No. 4 F.T.S., Abu Sueir, Egypt, it served as a parachute trainer at Henlow. For this purpose the Vimy had a ladder fitted on the port side of the fuselage beside the rear gunner's cockpit, and a small platform was built about the base of the outermost rear interplane strut on each side. The aircraft took off with a parachutist standing on each strut platform, facing rearwards and therefore pressed against the strut by the airstream. At a signal from the pilot, the parachutist moved round to the rear of the strut, pulled his parachute release, and had then no option about leaving the aircraft. The Vimy's upper and lower ailerons were interconnected by three cables: on the parachute trainers the middle cable was moved one rib-space inboard to increase the clearance for the parachutist on his rearward departure. The ladder on the fuselage side was for free-fall parachute descents; part of the trailing edge of the port lower centre section was cut away to facilitate its use.

The useful life of a number of Vimys, including some of the parachute trainers, was extended by replacing their Rolls-Royce Eagles with Bristol Jupiter IV or Armstrong-Siddeley Jaguar IV radial engines. At least one Vimy (*F9168*) is known to have had Jupiter VI engines, but these were replaced by Jupiters IV in August 1929. It may be that *F9168* was the first Vimy to have Jupiter engines, the initial conversion being made at Martlesham Heath. The fact that all other known conversions had Jupiters IV was doubtless a reflection of the economy-ridden condition of the R.A.F. at the time, for there can be little doubt that the engines had already seen service in Hawker Woodcocks. From the spring of 1929 onwards, most Vimys coming in to be reconditioned were given Jupiter or Jaguar engines, and Jupiter conversion sets were provided by Vickers Ltd. to facilitate engine changes at R.A.F. stations.

Both radial installations were characterised by stark simplicity and a total absence of any kind of cowling. The struts supporting the engines had to be modified and re-arranged: the rear struts formed an X-shaped support for the rear of the convergent engine-bearers, and the forward struts converged towards the engines.

Although the Vimy's R.A.F. career was unspectacular, it gained immortality by its successes in early long-range flights. The Vimy's first achievement in this field, the first Atlantic direct crossing, was of such a magnitude that it almost eclipsed the other two

major flights.

The aircraft in which Captain John Alcock, D.S.C., and Lt. Arthur Whitten-Brown covered the 1,890 miles between Lester's Field, St. Johns, Newfoundland, and Clifden, Co. Galway, Ireland, was specially built for the Atlantic flight. Its engines were two 360-h.p. Rolls-Royce Eagles VIII; additional tanks increased its fuel capacity to 865 gallons and gave the aircraft a range of 2,440 miles. The nose cockpit was faired over, and the pilot and navigator sat side-by-side in the main cockpit; behind them an enlarged turtle-back fairing extended over the fuel tanks. In place of the nose skid a wheel was fitted, but it and the tailplane skids were removed for the Atlantic flight.

At Vickers there was at one time some division of opinion as to whether one or two special Vimys should be built. The pressing need to make haste settled the matter, however, and only one was constructed. Such was the simplicity and speed of aircraft design work at the time that Rex Pierson wrote on 21st February 1919: "At present I am getting out drawings of (1) New oil tanks, (2) New water tank of increased capacity, (3) Petrol system, and I hope to let Muller have these by tomorrow morning."

Alcock made the first test flight in the Vimy on 18th April 1919, and he and Brown made several flights in it before it was dismantled and shipped to Newfoundland. After overcoming many difficulties, not the least of which was the finding of a field suitable for the take-off, the Vimy was airborne at 4.13 p.m. (G.M.T.) on 14th June 1919, and crossed the Newfoundland coast fifteen minutes later. At 8.40 a.m. (G.M.T.) on the following day it landed in Derrygimla Bog, Clifden, damaging the lower wings and the forepart of the fuselage. The Vimy was repaired and presented to the Science Museum, South Kensington, in December 1919; it can still be seen there.

In November 1919 another Vimy began another historic long-distance flight. A prize of £10,000 had been offered in March 1919 by the Australian Government for the first flight made by Australians from Britain to Australia in a British aircraft. It was stipulated that the flight must be accomplished within 720 hours, and the take-off was to be made from Hounslow aerodrome or Calshot seaplane station.

In view of the Vimy's recent Atlantic conquest it

continued on back page

SPECIFICATION

Power: First prototype, two 200 h.p. Hispano-Suiza, later two 260 h.p. Salmson 9Zm; second prototype, two 260 h.p. Sunbeam Maori; third prototype, two 300 h.p. Fiat A-12bis; fourth prototype, two 360 h.p. Rolls-Royce Eagle VIII. Production Vimy, two 300 h.p. Fiat A-12bis or two 360 h.p. Rolls-Royce Eagle VIII; one experimental installation of two 400 h.p. Liberty 12. Post-war trainer versions had two 450 h.p. Bristol Jupiter VI, two 420 h.p. Jupiter IV, or two 420 h.p. Armstrong-Siddeley Jaguar IV.

Dimensions: Span (B9952) 68 ft. 4 in., (B9953 and original form of B9954) 67 ft. 2 in., (B9954 modified and production Vimy) 68 ft.; length 43 ft. 6½ in.; height 15 ft.; chord 10 ft. 6 in.; gap 10 ft.; stagger, nil; dihedral (B9952 and B9953) 1°, (all other Vimys) 3°; incidence 3° 30'; span of tail 16 ft.; chord of tailplane and elevators 6 ft.; airscrew diameter (Hispano-Suiza) 9 ft. 3 in., (Fiat) 9 ft. 5 in., (Eagle) 10 ft. 6 in.

Areas: Wings and ailerons 1,300 sq. ft. (1,376 sq. ft. on B9953 and original form of B9954); ailerons, each 60·5 sq. ft. (58·75 sq. ft. on B9953 and original form of B9954); tailplanes (B9952) upper 37 sq. ft., lower 31 sq. ft., (all others) upper 61·3 sq. ft., lower 53·1 sq. ft.; elevators, total (B9952) 74 sq. ft., (all others) 63 sq. ft.; fins, each (production Eagle Vimy only) 13·5 sq. ft.; rudders, each 10·8 sq. ft.

Production:

Contractor	*Serial Nos.*	*Notes*
Vickers Ltd. (Aviation Dept.), Imperial Court, Basil Street, Knightsbridge, London, S.W.	B9952–B9954	Prototypes built at Bexley Heath.
	F701–F850	Built at Crayford; only twelve completed. Fiat, B.H.P. or Liberty engines specified.
	F8596–F8645	Full batch built at Weybridge. Contract specified ten should have Fiat engines, remainder B.H.P. Most, if not all, had Eagles.
	F9146–F9295	Only 50 completed at Weybridge.
	F9569	First Vimy with Rolls-Royce Eagle engines.
	H9963	Single aircraft only; believed Vickers-built.
	J7238–J7247 J7440–J7454 J7701–J7705	Vimy III.
Clayton and Shuttleworth, Lincoln	F2996–F3095 J251–J300	Of all the Vimys ordered from this firm, 124 were to have B.H.P. engines, the remainder Fiats. Doubtful whether any was completed.
Morgan & Co., Leighton Buzzard	F3146–F3195	B.H.P. engines specified, Eagles fitted. At least 40 aircraft completed.
	J1941–J1990	Contract cancelled.
Royal Aircraft Establishment, Farnborough, Hants	F2915–F2934	Fiat engines specified. No production beyond F2920 known; most completed aircraft were renumbered in H651–H670 batch.
	H651–H670	Fiat engines specified, Eagles fitted. Apparently only H651–H660 allotted.
Westland Aircraft Works, Yeovil, Somerset.	H5065–H5139	Liberty engines specified, Eagles fitted. Twenty-five only built.
Boulton & Paul Ltd., Riverside, Norwich	H4046–H4195	Contract cancelled 30.8.18.
Metropolitan Waggon Co., Birmingham	H4725–H4824	Contract cancelled.
Ransomes, Sims & Jefferies, Ipswich	H9413–H9512	Contract cancelled 1.11.18.

Armament: Bomb load of the Fiat-powered Vimy could consist of two 250 lb. bombs under the fuselage, four 230 lb. bombs under the lower centre section, and eight 250 lb. and four 112 lb. stowed internally. The internal bomb compartment could hold twelve 250 lb. bombs when necessary. Alternatively, two torpedoes could be carried. The Eagle-powered Vimy had provision for carrying twelve 112 lb. or twelve 250 lb. bombs internally, eight 112 lb. bombs under the lower wings, four 112 lb. bombs under the fuselage, and two 230 lb. bombs, one under each lower longeron. These two last bombs were carried on 520 lb. Skeleton Bomb Carriers Mk III converted to take the 230 lb. bomb. Standard equipment, two Michelin Flare Carriers Mk I and High Altitude Drift Bomb Sight Mk Ia.

Defensive armament consisted of four Mk III Lewis 0·303 in. machine guns: two, with 4½ in. Neame No. 1 Sight, were on a Scarff No. 2 Ring Mounting on the front cockpit; one could be carried on a Scarff mounting on the rear cockpit, but in post-war service this mounting was not usually fitted; one, with 2 in. Neame No. 2 Sight, was on a pivot mounting in the rear ventral position. There was provision for carrying four spare drums of ammunition in the front cockpit, six in the rear.

Service use: One Vimy was with the Independent Force, R.A.F., at the end of October 1918. After the war the Vimy was flown by R.A.F. Squadrons Nos. 7, 9, 45, 58, 70, 99, 100 ("D" Flight) and 216 and by the Night-Flying Flight at Biggin Hill. For training purposes the type was used at Cranwell; the Home Aircraft Depot, Henlow; and at No. 4 F.T.S., Abu Sueir, Egypt.

Examples of Vimys used by R.A.F. units:
No. 9 Sqn.—F8631 (later used at No. 4 F.T.S.). No. 58 Sqn.—F3184, F9161, F9187, J7238, J7246, J7441, J7449, J7450. No. 70 Sqn.—F8643, F9190. No. 216 Sqn.—H653, HR5089, J7443. No. 502 Sqn.—F9146, J7247. No. 4 F.T.S.—F8631 (ex No. 9 Sqn.), F8632, H657, JR7444, J7448, JR7454.

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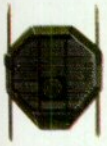
Vickers Vimy Eagle-powered prototype.

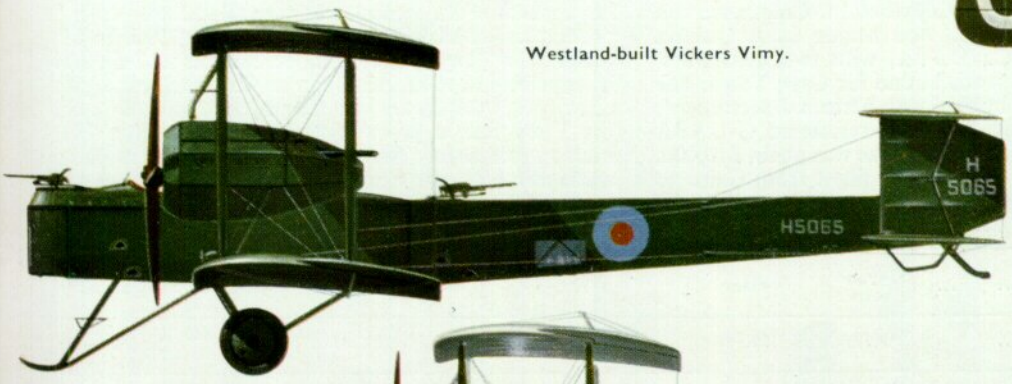
Prototype Eagle engine nacelle.

Vickers Vimy G-EAOU flown by Ross and Keith Smith.

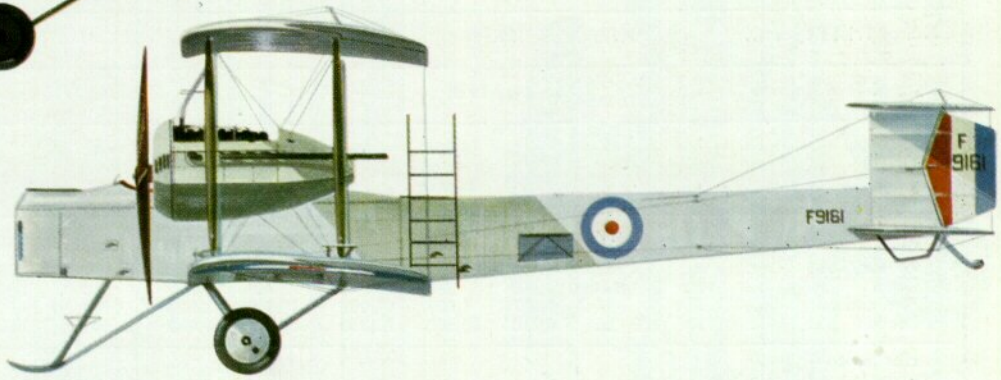


Standard Eagle engine nacelle.

Westland-built Vickers Vimy.



Vickers Vimy parachute trainer.



Vickers Vimy trainer of No. 4 F.T.S., Heliopolis, Egypt.

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was natural that Vickers should enter an aircraft of the same type for the Australian flight. The Vimy selected was *F8630*, which was given the civil identity G-EAOU; this registration was irreverently interpreted as meaning "God 'elp all of us". The pilot was Captain Ross Smith, the redoubtable "Hadji" of No. 1 Squadron, Australian Flying Corps, and a Bristol Fighter pilot of distinction; his brother Lt. Keith Smith, was navigator; and their mechanics were Sgts. J. M. Bennett and W. H. Shiers.

Ross Smith took off from Hounslow at 8 a.m. on 12th November 1919 and G-EAOU had an adventurous journey before reaching Darwin at 4.10 p.m. on 10th December. The 11,130 miles from Hounslow had been covered in just under twenty-eight days elapsed time, 135 hrs. 55 mins. flying time.

Vickers Ltd. presented G-EAOU to the Australian Government. It was allotted the Australian serial A5-1, but it is doubtful whether the aircraft ever bore this marking. It was exhibited in the Australian War Memorial at Canberra until 1957, when it was moved to Adelaide to form the centre of a memorial to the four men who had made the first flight to Australia. Although severely damaged by fire on 3rd November 1957 while in transit from Canberra, the Vimy was carefully restored and installed in the memorial.

The third long-distance flight undertaken by a Vimy began on 4th February 1920, when Lt.-Col. Pierre van Ryneveld, D.S.O., M.C., and Major C. J. Quintin Brand, D.S.O., M.C., D.F.C., with two mechanics, took off from Brooklands bound for Cape Town. The flight was sponsored by the South African Government; the aircraft was Eagle-powered, registered G-UABA and named *Silver Queen:* the prize was again £10,000, put up by the *Daily Mail* for a flight from Cairo to Cape Town. The *Silver Queen* had as competitors the Handley Page 0/400 G-EAMC and the Vickers Vimy Commercial G-EAAV.

On 10th February 1920 van Ryneveld and Brand left Heliopolis after dark; next day, when they were 530 miles from Cairo and still eighty miles short of Wadi Halfa, the radiator tap on the starboard engine opened, the engine soon stopped, and an emergency landing was made at Korosko. The Vimy was wrecked on the boulder-strewn ground, but the crew unhurt.

At the request of the South African Government the Royal Air Force placed another Vimy at the disposal of van Ryneveld and Brand. The engines and instruments of *Silver Queen* were salvaged and returned to Cairo for installation in the replacement aircraft, which was named *Silver Queen II*. The new Vimy took off from Heliopolis on 22nd February; Bulawayo was reached one week later, but there *Silver Queen II* was wrecked while taking off for Pretoria, her take-off performance having been greatly reduced by heat and the altitude of the aerodrome at Bulawayo. Again van Ryneveld and Brand were unhurt, and they completed their flight to Cape Town in the D.H.9 *H5648*, reaching their destination on 20th March.

For Service use the Vimy Ambulance and Vernon were developed via the Vimy Commercial of 1919 (to which the spurious type numbers F.B.27B and F.B.28 have been wrongly attributed: the last number in Vickers F.B. series was the F.B.27A Vimy); production of all Vimy variants ended in 1925. In the R.A.F. the Vimy outlived its descendants and did not disappear until 1933. Although denied the opportunity of proving itself in the war for which it was designed, the Vimy had a great and varied career that Rex Pierson can hardly have envisaged when, in 1917, he made his first rough sketches in Major Buchanan's office at the Air Ministry.

WEIGHTS AND PERFORMANCE

Engines	Hispano Suiza	Maori		Fiat		Eagles			Salmson	Jaguar
No. of Trial Report	M.177A	M.199		Mfr's. Trials	M.229	M.241			Mfr's. Trials	—
Date of Trial Report	April 1918	May 1918		—	Sept. 1918	October 1918			—	—
Load	—	No bombs	2,000 lb. of bombs	—	2,000 lb. of bombs	No bombs	With bomb load	With increased fuel load	—	—
Weights (lb):										
Empty	5,420	6,735	6,735	6,625	6,934	7,101	7,101	7,101	5,560	6,550
Military load	2,353	108	2,118	2,043	2,124	Nil	1,650	1,209	1,992	1,200
Crew	540	360	360	540	360	360	360	540	540	540
Fuel and oil	807	1,087	1,087	1,092	1,390	2,539	3,389	3,650	1,508	3,110
Loaded	9,120	8,290	10,300	10,300	10,808	10,000	12,500	12,500	9,600	11,400
Performance—										
Maximum speed (m.p.h.):										
At ground level	90	—	—	—	98	—	103	—	—	112
At 5,000 ft.	87	—	89	96	—	—	98	98	94	105
At 6,500 ft.	85	96	85	—	—	100	95	—	—	101
At 10,000 ft.	—	89·5	—	90	—	96	—	—	—	—
Climb to:	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	m. s.
5,000 ft.	23 35	— —	19 20	13 30	— —	— —	21 55	21 55	13 30	10 15
6,500 ft.	36 10	13 10	28 30	— —	30 00	14 00	33 00	33 00	— —	15 00
10,000 ft.	— —	24 25	— —	45 00	— —	25 55	— —	— —	— —	32 30
Ceiling (ft.): Service	6,500	14,000	8,000	—	6,500	14,000	7,000	7,000	—	10,500
Absolute	9,500	—	10,500	11,000	—	—	10,500	10,500	11,500	12,300
Endurance (hours)	3½	4¼	4¼	3¼	—	—	—	11	5¾	5

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